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An experiment with three studies of physiological connectedness amongst twins and its possible relationship to attachment

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Highlights

- used shock and surprise stimuli given to one twin and psychophysiological response recorded in the other.
- confirmed that those pairs of twins who often report psychic experiences can seemingly replicate some of their experiences.
- replicated 2 previous studies and provide a methodology for future ones.

Abstract

Fourteen pairs of twins were selected on the basis of their high scores on *The Exceptional Experiences Questionnaire (EEQ)*, which documents the frequency and intensity of telepathic and synchronistic experiences amongst twins. The twins alternated in the role of sender in which they were exposed to a surprise or shock stimulus and in the role of receiver in which their electrodermal activity (EDA) was monitored. Sender and receiver were placed in laboratory rooms at remote ends of a building separated by distance and barriers ensuring sensory isolation. Twins in the role of sender were presented with a series of surprise or shock stimuli during the period randomly selected for presentation. This was one out of the 8 periods occurring in the block of 5 min. Within the selected period, the actual presentation lasted 30 s and occurred at approximately the midpoint of the period. The stimulus presentation in this block of 5 min was repeated 5 times making thereby a 25-minute session for each twin belonging to the sender-receiver pair. During this session, the other twin in the role of receiver, had been equipped with electrodes recording EDA

and otherwise advised to relax during the session. The task for the judge in the studies was to use the electrophysiological data from the non-shocked twin to identify the exact periods when the stimuli had been exposed to the sending twin. The EDA from 91 useable presentations were displayed and analysed for the purpose of locating any peak EDA response in each of the possible eight periods corresponding to the stimuli exposure times. Correct identifications would thus occur by chance one in eight times. The attempts at these identifications were carried out by GB, a researcher experienced at EDA interpretation but blind as to the periods that had been chosen for the stimulus exposure. The findings from the three experimental studies showed there were 18 correct identifications out of the total 91 stimulus exposures (MCE = 11.4), which reached statistical significance on a one-tailed *t*-test ($p = 0.043$), and with a binomial test ($p = .03$, one-tailed). However, only one of the three studies reached significance, in this case at the same level as the collective results ($p = 0.043$, one-tailed). Two explanations for this are the observed variability in the task-performances of the pairs of twins and in the differences in the sources of the twins for each of the studies. The results of a questionnaire entitled '*Experiences in Close Relationships*' (ECR), adapted for twin relationships to assess their degree of attachment, indicated that those twins with many "correct identifications of epochs from the EDA" were not significantly different from the others on this measure of attachment. However, it should be noted that the twins here according to the ECR all had close emotional relationships to each other, thereby giving too little variation to adequately test the hypotheses concerning the role of attachment. The data provides justification for carrying out further studies using this methodology and furthermore that pairs of twins should be used with greater variation in attachment measures. The results are briefly discussed in the context of recent findings concerning the neuropsychology of experiences of synchronicity.

Introduction

Although there exists a wealth of anecdotal reports of apparently synchronous and telepathic experiences occurring between pairs of twins, there are very few empirical studies of these type of exceptional experiences [16]. A review by Parker [14] found there were only eight attempts to study such exceptional experiences amongst twins that used controlled conditions. We have moreover been unable to find any study which has looked at these phenomena in relation to the quality of attachment between the twins reporting these experiences. Attachment is a bonding process and refers to how psychologically important the individual is in one's life. This includes intellectual and emotional closeness, but also shared memories and experiences.

In reviewing these early studies, it became clear that while only few of them seem to confirm the reality of the exceptional phenomena, most of the studies show significant shortcomings [1,6,9,11,12,17,20]. The most basic deficiencies concerned the use of twins who were *not selected* for their claims of having exceptional experience and on those occasions when twins were selected, they were too few in number to justify firm conclusions. These and other shortcomings, when seen in contrast to the abundance of anecdotal confirmatory reports, justify doing further research with more appropriately designed experiments.

Two recently reported studies made attempts to rectify this by using psychophysiological recordings as an indicator of one major type of exceptional experiences that twins often claim, namely a telepathic type of connectedness. The studies assessed the degree of *connectedness* between identical twins, when one of the pair of twins was exposed to a shock or surprise stimulus [10,15]. The two studies were aimed at developing a standard methodological design, that would be easy to use in forthcoming studies. Since both studies gave statistically significant findings, supporting the special connectedness hypothesis, essentially the same methodology was applied in the work reported here.

The methodology in these studies is accordingly described here in some detail. This involved pairs of twins,

carefully selected from large pools of twins based on their mutual exceptional experiences, their interest, and their availability for the studies. The selected twins took on the roles of being the sender and the receiver in a special connectedness or telepathy type of experiment and then reversed these roles afterwards. During these sessions, the twin in the role of the sender was exposed to a series, here termed "block", of exposures, composed of five surprise and shock stimuli. Each exposure, here termed "epoch", occurred in the middle of the period and each particular epoch was randomly chosen from one of eight possible such epochs. During the epoch, while the stimulus was being exposed to the twin in the role of sender, the electrodermal activity (EDA) of the twin in the role of receiver was being monitored using the psychophysiological equipment. The aim of this methodology is to assess if the EDA, that corresponds timewise to the administration of surprises/shocks, is distinguishable from those occurring during control epochs (periods in which there is no exposure to surprise or shock stimuli). The psychophysiological recordings used in order to make such judgements, included respiration rate, blood pressure, and bodily movements but the major focus was on the EDA.

In both these experiments, the pairs of twins were selected with the help of the appeals via mass media, but in the current experimentation we wished to develop a more formal means of selecting twins on the basis of their experiences. This led to the development of *The Exceptional Experiences Questionnaire* (EEQ) which was distributed at large gatherings of twins on two occasions: in 2009 and 2013. These gatherings were of twins attending the open days called "Twin Days" at King's College, London. These efforts gave a sample of more than 200 twins, who responded, from which the twins in the studies reported here were later selected. The basis for this selection concerned the occurrence of regular exceptional experiences of apparent "telepathic" and/or "synchronistic" occurrences relating to the twin pair. The term *exceptional experiences* is being used here to refer to these two main categories of remarkable phenomena, which twins often report: namely apparent telepathic experiences and remarkable coincidences. For instance, the EEQ asked: "Have you ever experienced telepathy by which is meant some form of communication that could not easily be explained by prior knowledge, common experience or other normal means". A similar formulation was used for remarkable coincidences or synchronicities.

The most frequent kind of exceptional experiences of connectedness reported by identical twins, concerned accidents and injury thus confirming the findings of the previous surveys at Kings College [4]. Identical (monozygotic) twins reported significantly more of these experiences than non-identical (dizygotic) twins. Identical twins were found to report significantly stronger attachment to their twin than non-identical twins. The surveys indicate that approximately 60 % of twins reported having telepathy-like experiences, but only one out of ten report having them on a regular basis [3].

Previous surveys concerning twins who reported shared exceptional experiences, produced compatible findings. Larry Dossey [5] concluded that despite exceptional experiences have been reported by hundreds of twins during many years, the significance of these experiences has largely been ignored. Prominent amongst these reported experiences that Dossey focused on, are the *telesomatic* events in which one twin reacts bodily to what is happening in the other twin. Similarly, Rosambeau [18] found that about 30 percent of the 600 twins they questioned, reported experiences that were best described as a "community of sensations". In typical cases, one twin has an accident in which a body-part is injured while the other feels a sudden pain in the same part of the body, sometimes producing a bruise, burn, or blister on the corresponding spot.

In web-based survey on attachment and exceptional experiences using the British twin registry, 5060 twins were invited to respond via an individual email with a personalized link [2]. The survey questions were completed by 2075 twins, thereby giving a remarkably high response rate of 41 %. Of these twins, 89 % were females and 11 % were males. Most respondents (1387) were identical twins, and about a third (660) were non-identical (fraternal). The age of the participants varied from 19 to 90 (M = 56).

As for the results, amongst the participants in the study, 1488 twins (72%) reported having had at least one exceptional experience with their twin, and 55 % of twins reported this to have occurred on at least 10 occasions. In comparing this finding to those of exceptional experiences occurring with persons other than their twin, it was found that 28% reported this, but only occasionally and most often with family members. It might be supposed from this, that genetic kinship is one factor creating a predisposition for having these experiences. Genetic identity is however complex and in reviewing this in the case of twins, Jensen and Parker [10], distinguish between two different types of fraternal twins and four different types of maternal twins depending on whether there occur separations of the amnion, chorion, and placenta. No doubt because of the difficulty of obtaining embryological and birth data, little is currently known about the possible influence of these conditions on the attachment and other experiences of twins.

There are almost no reported studies on attachment between twins. Tancredy and Fraley [21] and Fraley and Tancredy [8] were amongst the first to include twins in their investigations of attachment between siblings, but more detailed analyses were provided by Schwarz, Mustalic and Junker [19]. They compared attachment between different kinds of siblings and even to that of romantic partners. As might be expected, the analyses revealed that twins in general were significantly more attached to each other than the non-twin siblings were to their siblings. More surprisingly, monozygotic (identical or maternal) twins were only marginally significantly more attached to their twins than dizygotic twins (non-identical or fraternal) were. This group of twins were found to be as equally attached to their non-twin siblings as to their romantic partner, but they reported being emotionally closer to their sibling than their romantic partner. Dizygotic twins reported being equally emotional close to their romantic partner as to their sibling. These findings serve to reinforce the concept of twinhood as involving a special attachment.

The studies reported here began in 2014 and formed part of the first author's doctoral work awarded in 2020. They had two aims: Firstly, it was to explore the phenomenon of physiological connectedness amongst twins reporting prior exceptional experiences using the methodology developed by Parker and Jensen [15]. The second aim was to evaluate if the performances using this methodology related to the degree of attachment between the pairs of twins.

1. The twins acting as receiver will show identifiable electrodermal activity that occurs response to the sender twin being exposed to shock and surprise stimuli: As such, the EDA in the exposure periods will be statistically significantly distinguishable from non-exposure periods.

2. There will be a positive relationship between the number of correct identifications (hits) of the periods when the stimuli are administered and the reported degree of attachment (both in childhood and adulthood) between twins.

Section snippets

Design

In these studies, the output of the psychophysiological equipment measuring electrodermal activity of the receiver was used as an indication of potential connectedness underlying or expressing exceptional experiences. The design was closely based on that used in the aforementioned Parker and Jensen [15] experiment. The major difference concerned the limitation of the physiological measures to that of electrodermal activity.

Following this design, each session had a duration of 25 min and involved…

EDA and exceptional experiences data

The EDA data are analyzed here in relation to the correct identification of the exposure epochs.

The first study: The three pairs of twins tested here produced 19 epochs with analysable display graphs. The mean chance expectancy per epoch of a correct identification is eight or 0.125, which for this number is 2.375 correct identifications. The result gave a total of four correct placements of the epoch, which is above chance but non-significant $p = .1925$. A binomial test yielded also…

Discussion

The three studies continue the development reported in two previous studies of a methodology for studying the possible anomalous physiological connectedness between twins physically isolated from each other [10,15]. All the pairs of twins in the current studies, with one exception, were deemed to be identical twins and were recruited because they as a group had reported a high frequency of such experiences in surveys [3,4]. The same basic procedure was used as the one developed in the last of the…

CRediT authorship contribution statement

Göran Brusewitz: Writing – review & editing. **Adrian Parker:** Writing – review & editing.…

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